

Claims :

1. A method in optical fiber based spectral filtering, where a length of an optical fiber (40) comprising at least a core region (CR) surrounded by a cladding region (CL) is coiled over its length in whole or in part to subject the fiber to longitudinal curvature in order to affect the optical transmission properties of the fiber, **characterized** in that the fiber (50) is arranged to have radially asymmetric refractive index distribution (R) and in addition to coiling the fiber lengthwise, the fiber is over its length in whole or in part also twisted around its longitudinal axis.
2. The method according to claim 1, **characterized** in that the optical fiber (50) is arranged to have a radially off-centered core region (CR).
3. The method according to claim 1, **characterized** in that the optical fiber (50) is arranged to have a non-circular core (CR) or cladding (CL) region.
4. The method according to claim 1, **characterized** in that the optical fiber (50) is arranged to have a region (G) of depressed refractive index in the cladding region (CL) located in the vicinity of the core region (CR).
5. The method according to claim 1, **characterized** in that the optical fiber (50) is a single mode fiber.
6. An optical fiber device for spectral filtering containing a length of optical fiber (40), the fiber comprising at least a core region (CR) surrounded by a cladding region (CL), and the fiber being coiled over its length in whole or in part to subject the fiber to longitudinal curvature in order to affect the optical transmission properties of the fiber, **characterized** in that the fiber (50) is arranged to have radially asymmetric refractive index distribution (R) and in addition to being coiled lengthwise, the fiber is over its length in whole or in part also arranged to be twisted around its longitudinal axis.

7. The device according to claim 6, **characterized** in that the optical fiber (50) has a radially off-centered core region (CR).
- 5 8. The device according to claim 6, **characterized** in that the optical fiber (50) has a non-circular core (CR) or cladding (CL) region.
9. The device according to claim 6, **characterized** in that the optical fiber (50) has a region (G) of depressed refractive index in the cladding region (CL) located in the vicinity of the core region (CR).
- 10 10. The device according to claim 6, **characterized** in that the optical fiber (50) is a single mode fiber.
11. The device according to claim 6, **characterized** in that the optical fiber (50) is a rare-earth metal doped active fiber.
- 15 12. The device according to claim 11, **characterized** in that the optical fiber (50) constitutes a distributed fiber filter in an optical fiber amplifier.
- 20 13. The device according to claim 12, **characterized** in that the optical fiber (50) constitutes a part of a cladding pumped optical fiber amplifier.

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